



**CHENMKO ENTERPRISE CO.,LTD**

**CHT2907APT**

**SURFACE MOUNT  
PNP Switching Transistor**

VOLTAGE 60 Volts CURRENT 0.6 Ampere

Lead free devices

**APPLICATION**

- \* Telephony and professional communication equipment.
- \* Other switching applications.

**FEATURE**

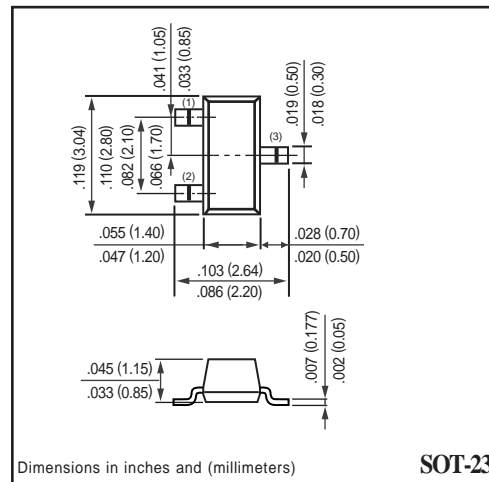
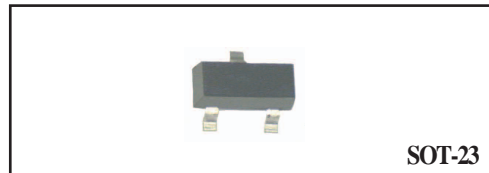
- \* Small surface mounting type. (SOT-23)
- \* High current (Max.=600mA).
- \* Suitable for high packing density.
- \* Low voltage (Max.=60V) .
- \* High saturation current capability.
- \* Voltage controlled small signal switch.

**CONSTRUCTION**

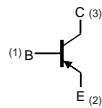
- \* PNP Switching Transistor

**MARKING**

- \* 2F-



**CIRCUIT**



**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	-	-60	V
V <sub>CEO</sub>	collector-emitter voltage	open base	-	-60	V
V <sub>EBO</sub>	emitter-base voltage	open collector	-	-5	V
I <sub>C</sub>	collector current (DC)		-	-600	mA
I <sub>CM</sub>	peak collector current		-	-800	mA
I <sub>BM</sub>	peak base current		-	-200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	-	350	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	junction temperature		-	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## RATING CHARACTERISTIC CURVES ( CHT2907APT )

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	357	K/W

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

### CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -60\text{ V}$	–	-10	nA
		$I_C = 0; V_{CB} = -60\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	–	-10	uA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	-10	nA
$h_{FE}$	DC current gain	$I_C = -0.1\text{ mA}; V_{CE} = -10\text{V};$ note 1	35	–	
		$I_C = -1.0\text{ mA}; V_{CE} = -10\text{V}$	50	–	
		$I_C = -10\text{ mA}; V_{CE} = -10\text{V}$	75	–	
		$I_C = -10\text{ mA}; V_{CE} = -10\text{V}; T_a = -55^{\circ}\text{C}$	35	–	
		$I_C = -150\text{ mA}; V_{CE} = -10\text{V}$	100	300	
		$I_C = -150\text{ mA}; V_{CE} = -1.0\text{V}$	50	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	-400	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	-1.6	V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	-0.6	-1.3	V
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	-2.6	V
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = -5\text{ V}; f = 1\text{ MHz}$	–	8	pF
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{BE} = -500\text{ mV}; f = 1\text{ MHz}$	–	30	pF
$f_T$	transition frequency	$I_C = -20\text{ mA}; V_{CE} = -20\text{ V}; f = 100\text{ MHz}$	200	–	MHz
F	noise figure	$I_C = 100\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 1\text{ k}\Omega; f = 1.0\text{ kHz}$	–	4	dB

#### Switching times (between 10% and 90% levels);

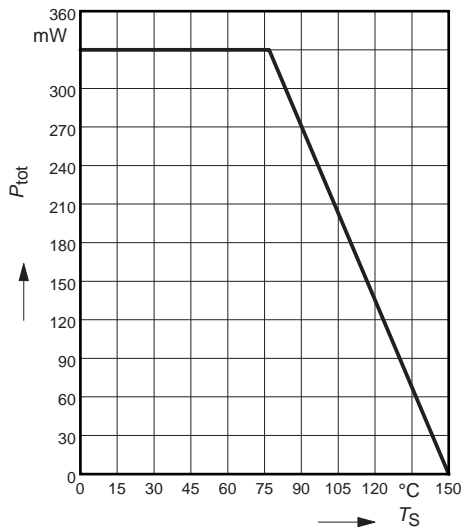
$t_{on}$	turn-on time	$I_{Con} = -150\text{ mA}; I_{Bon} = -15\text{ mA}; I_{Boff} = -15\text{ mA}$	–	35	ns
$t_d$	delay time		–	10	ns
$t_r$	rise time		–	40	ns
$t_{off}$	turn-off time		–	100	ns
$t_s$	storage time		–	80	ns
$t_f$	fall time		–	30	ns

#### Note

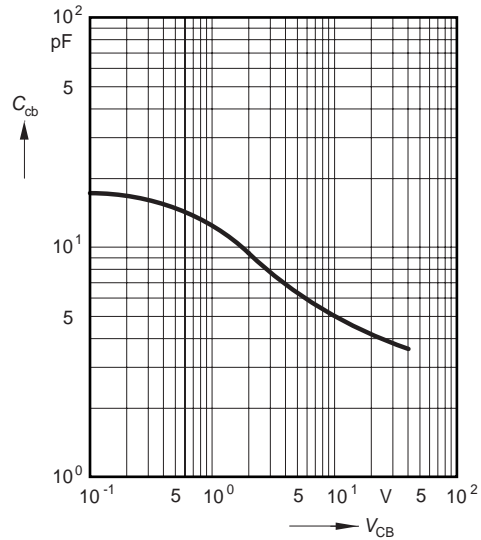
1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02.$

## RATING CHARACTERISTIC CURVES ( CHT2907APT )

**Total power dissipation**  $P_{\text{tot}} = f(T_S)$

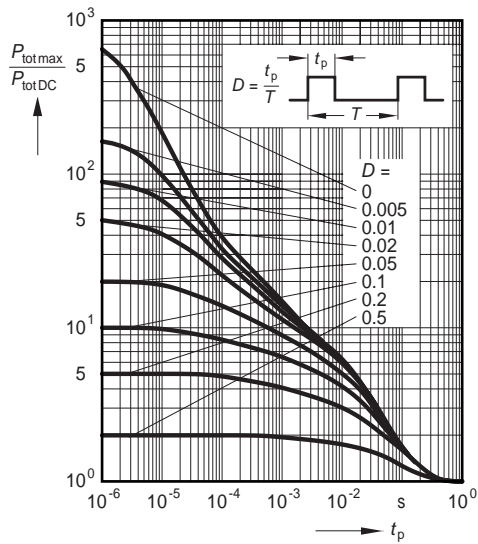


**Collector-base capacitance**  $C_{\text{CB}} = f(V_{\text{CB}})$   
 $f = 1\text{MHz}$



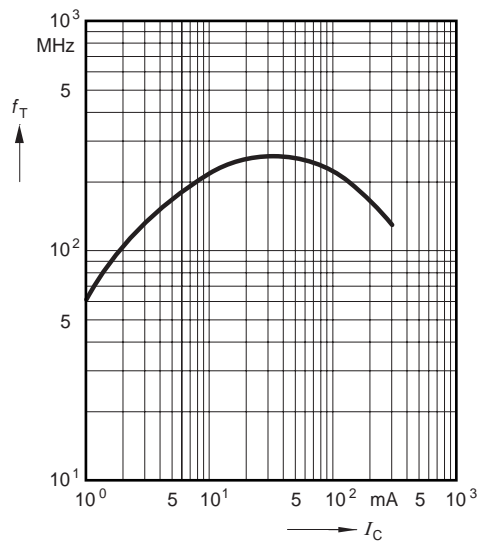
**Permissible pulse load**

$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$



**Transition frequency**  $f_T = f(I_C)$

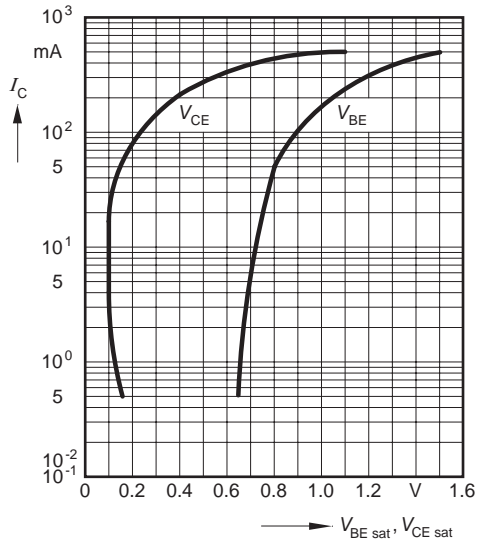
$V_{\text{CE}} = 5\text{V}$



## RATING CHARACTERISTIC CURVES ( CHT2907APT )

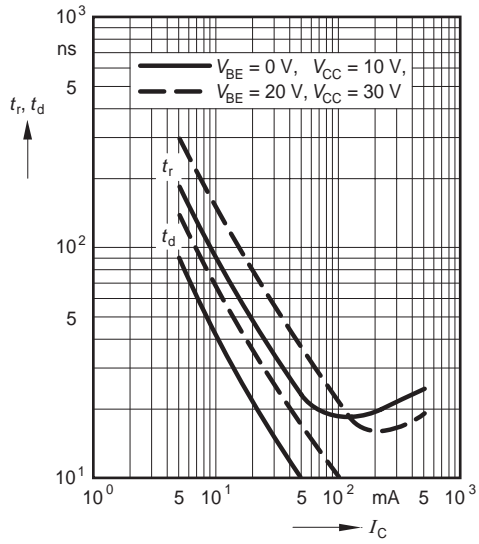
**Saturation voltage**  $I_C = f(V_{BEsat}, V_{CEsat})$

$h_{FE} = 10$

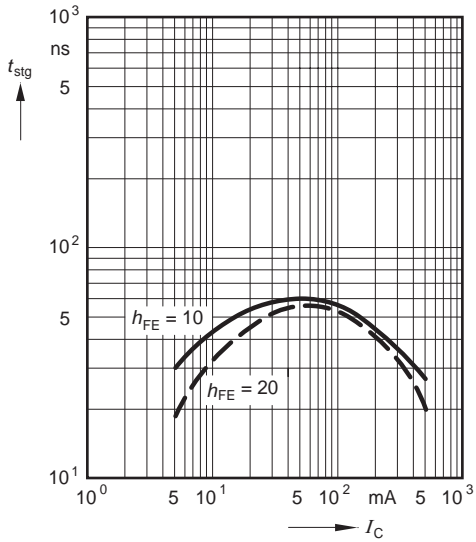


**Delay time**  $t_d = f(I_C)$

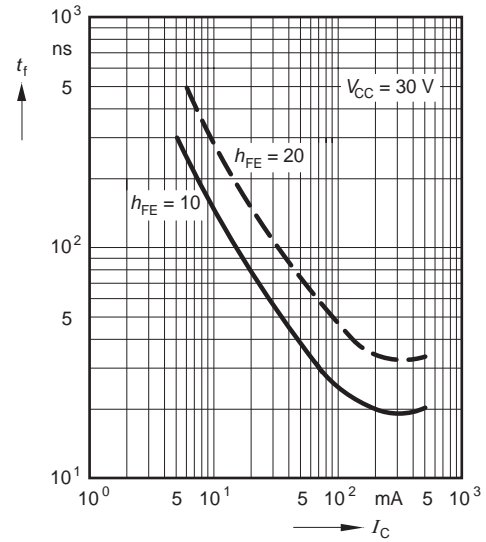
**Rise time**  $t_r = f(I_C)$



**Storage time**  $t_{stg} = f(I_C)$



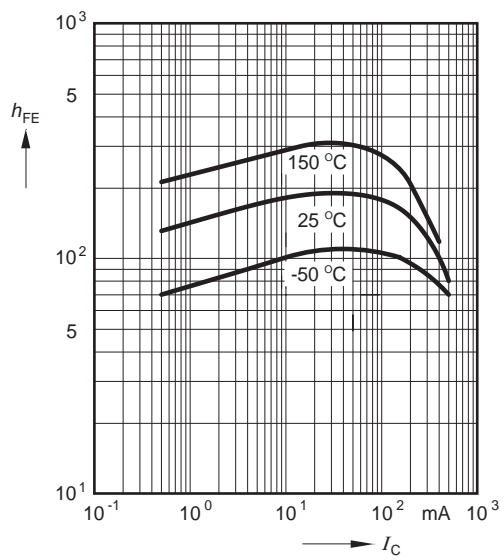
**Fall time**  $t_f = f(I_C)$



## RATING CHARACTERISTIC CURVES ( CHT2907APT )

DC current gain  $h_{FE} = f(I_C)$

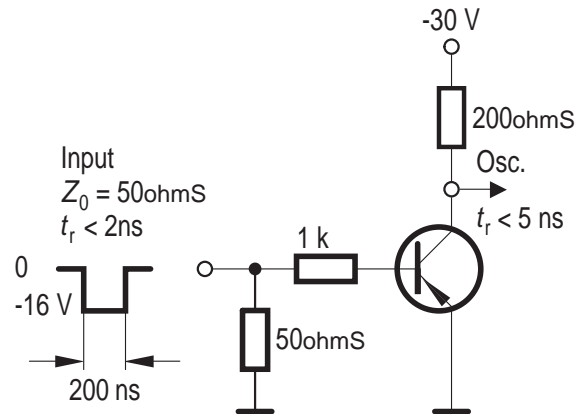
$V_{CE} = 5V$



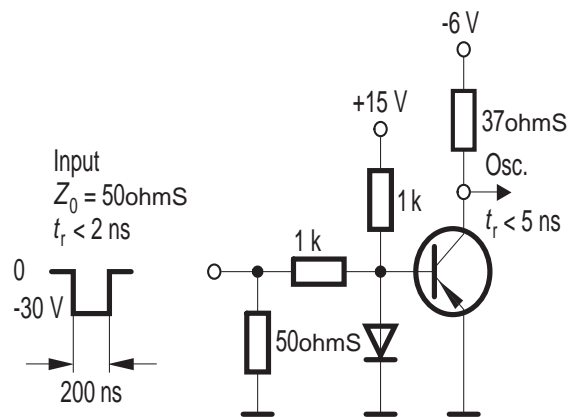
## RATING CHARACTERISTIC CURVES ( CHT2907APT )

### Test circuits

#### Delay and rise time



#### Storage and fall time



**Oscilloscope:**  $R > 100\text{ohmS}$ ,  $C < 12\text{pF}$ ,  $t_r < 5\text{ns}$